

Public Health Then and Now

The Making of a Germ Panic, Then and Now

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ABSTRACT

Over the last 2 decades, a heightened interest in germs has been evident in many aspects of American popular culture, including news coverage, advertisements, and entertainment media. Although clearly a response to the AIDS epidemic and other recent disease outbreaks, current obsessions with germs have some striking parallels with a similar period of intense anxiety about disease germs that occurred between 1900 and 1940. A comparison of these 2 periods of germ "panic" suggests some of the long-term cultural trends that contributed to their making.

Both germ panics reflected anxieties about societal incorporation, associated with expanding markets, transportation networks, and mass immigration. They were also shaped by new trends in public health education, journalism, advertising, and entertainment media. In comparison to the first germ panic, the current discourse about the "revenge of the superbugs" is considerably more pessimistic because of increasing worries about the environment, suspicions of governmental authority, and distrust of expert knowledge. Yet, as popular anxieties about infectious disease have increased, public health scientists have been attracting favorable coverage in their role as "medical detectives" on the trail of the "killer germ." (*Am J Public Health*. 2000;90:191-198)

In June 1998, hundreds of families from the Atlanta, Ga, metropolitan region sought relief at a popular water park from an early summer heat wave. Little did the parents know, as they watched their toddlers play in the baby pool, that the water had been contaminated with feces, probably from a leaky diaper, carrying the infamous strain of *Escherichia coli* known as O157:H7. In the following weeks, 26 young children became ill, including the 3-year-old son of the Atlanta Braves shortstop Walt Weiss. Brody Weiss's struggle to survive became a sidebar to the 1998 baseball season, as sportscasters anxiously reported his initial deterioration and then celebrated his recovery. Brody's story contrasted sadly with that of 2-year-old McCall Aikin, who died from the *E coli* infection she contracted that same June day.¹

Revenge of the Superbugs

The coverage of the Atlanta water park incident illustrates a kind of "killer germ" news feature that has become increasingly common in the American news media over the last decade. Reports on outbreaks of *E coli*, flesh-eating *Streptococcus*, hantavirus, and other unusual pathogens repeat the same set of messages: what looks clean, safe, and pleasurable is not; ordinary, everyday objects—baby pools, apple juice, tap water, packages of ground beef—may be carriers of deadly disease. One false step, one casual slip, and death may be on your doorstep.

These warnings often are illustrated with the latest in colorized microphotography that lends the offending microbes an eerie beauty. Otherworldly portraits of pathogens are accompanied by homely photographs of the ordinary people unexpectedly struck down by the pathogens' virulence. For example, an August 1998 *Time* article on the *E coli* outbreak featured a studio portrait of McCall Aikin, the kind of picture countless parents

carry in their wallets, paired with a candid shot of Brody Weiss eating a hot dog with his mother at the All Star game. These contrasting visual representations of the germ and its victims were accompanied by headlines that sound like a preview of coming attractions at the local movie theater. "It's turning up everywhere: in your water, your food, the pool. How to protect yourself from THE KILLER GERM," declared the caption on the 1998 *Time* cover. The accompanying narratives cast public health scientists as medical detectives, worthy successors of John Snow or, perhaps more appropriately, the television character "Quincy," who track the microbial culprit along a trail of contaminated ground beef or polluted tap water.²

The killer germ genre of journalism is just one indication of a heightened interest in infectious diseases evident in contemporary American culture. Themes enunciated in best-sellers such as Laurie Garrett's *The Coming Plague: Newly Emerging Diseases in a World Out of Balance* (1994) and Richard Preston's *The Hot Zone* (1994) have been picked up by novelists and filmmakers. The concept of "nature striking back" has been embroidered with conspiratorial plots involving corporate skulduggery, international espionage, and bioterrorist attacks. Simultaneously, advertisers have adopted the "revenge of the superbug" theme to promote a wide range of consumer products, from bottled water and hand soap to Microban-coated baby toys. Even a brief look at a magazine or television show furnishes ample evidence that the germ sell is everywhere now.³

At one level, the widespread interest in germs seems easily understood as a response

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to the AIDS epidemic and other troubling disease outbreaks of the last 2 decades. To date, the AIDS pandemic has taken an estimated 13.9 million lives; about 420,000 of them were Americans. Deadly outbreaks of “emerging viruses” such as Ebola virus and hantavirus, although far more limited in their effect, have raised fears of new plagues to come. Misuse and overuse of antibiotics have multiplied the number of drug-resistant strains of older bacterial diseases such as tuberculosis (TB) and gonorrhea. Finally, well-publicized breaches in food and water safety have produced localized epidemics of potentially deadly diseases such as those caused by *E. coli*.⁴

At another level, the “revenge of the superbugs” theme has become linked to more generalized end-of-the-millennium fears. Some commentators hypothesize that now that the Cold War is over, Americans need a new enemy to replace the “evil empire” of the Soviet Union; these commentators note that the threat of germ warfare and bioterrorism works well to justify peacetime defense expenditures. Others see media coverage of emerging diseases as promoting neocolonial perceptions of Third World immigrants and countries as “disease breeders” that threaten the First World’s health security. Still others wonder if the germ scare is simply a clever marketing ploy designed to sell movies, books, and antibacterial products in a competitive consumer culture.⁵

Although the current fascination with killer germs undoubtedly reflects a post-AIDS, post-Cold War crisis of confidence, it bears some striking similarities to an earlier period, approximately 1900 to 1940, when Americans also developed a heightened consciousness of the germ. Then, as now, multiple forms of mass culture, including public health posters, magazine articles, movies, and advertising, were used to raise and channel that sensitivity into new hygienic rituals. Then, as now, Americans heard a constant stream of messages designed to make them doubt their security against potentially fatal infections. Contemporary portrayals of killer germs are recycling fears and beliefs that have long historical roots. By comparing these 2 periods of heightened germ anxiety, I seek to map out some of the broader dynamics at work in the making of such germ “panics.”

My use of the term *germ panic* is loosely adapted from the sociologic literature on so-called moral panics—that is, episodes of intense societal concern about forms of social deviance such as drug addiction or child molestation. These are not panics in the sense that a fire sends people rushing for exits but rather involve a more generalized sense of anxiety. Sociologists normally apply the term to worries that seem out of proportion to the

actual incidence of the problem. I use it in a more neutral way, recognizing that it is premature, indeed presumptuous, to suggest that anxieties produced by the AIDS pandemic, which now affects about 22 million people worldwide, are out of proportion to the problem. Moreover, some of the same themes emphasized in the killer germ genre of contemporary popular culture have been supported by scientific reports on emerging diseases issued by the Institute of Medicine and the Woods Hole Working Group on Emerging Diseases. Just because a public health issue attracts the attention of Random House or Hollywood, it should not lose its status as a genuine problem.⁶

The historical study of disease teaches us, if nothing else, that a culture’s attentiveness to a perceived health risk is determined not only by statistics but also by a broad range of other factors. Whether a disease is deemed newsworthy, so that the media cover it and reinforce its importance; whether it has commercial potential to sell products or services, so that advertising amplifies concern about its avoidance; and whether its incidence reflects other societal problems, so that activists and reformers become invested in its prevention are all factors that help to determine which disease phenomena stake a claim on the popular imagination. Comparing 2 periods of germ panic offers a useful way to identify and understand the broad cultural dynamics that shape attention to public health issues.

These 2 eras—from approximately 1900 to 1940 and from 1985 to the present—are both characterized by a heightened popular interest in disease germs expressed in varied formats, including public health campaigns, news media, and advertisements. Anxieties about infectious diseases certainly existed at other times in the 20th century, most notably during the polio scares of the 1950s. But what marks these 2 periods as distinctive is, first, the greater frequency, intensity, and pervasiveness of germ-related concerns expressed in a wide range of media and, second, an awareness *at the time* that germs had become a subject of widespread preoccupation.

The First Germ Panic, 1900–1940

The first germ panic developed in the wake of scientific acceptance of the germ theory of disease. Although the germ theory has an ancient pedigree dating back to the *Corpus Hippocraticum*, it was only in the 1870s and 1880s that experimentalists such as Louis Pasteur and Robert Koch provided compelling scientific proof linking specific microorganisms to specific diseases. Between 1885 and 1915, the rapid development of bacteriologic

methods led to an explosion of knowledge about both public and private hygiene. Gradually, older theories of atmospheric infection gave way to a more modern emphasis on casual contact, food and water contamination, and insect carriers as the chief sources of infection in everyday life.⁷

The new bacteriology became the foundation of aggressive public health campaigns that sought to make Americans of all ages, classes, and races aware of the existence of disease germs and practice specific behaviors to avoid them. Turn-of-the-century health education emphasized the hidden dangers of germs lurking in everyday life. Any object touched by another person, whether it be paper money, library books, or common drinking cups, represented a potentially deadly carrier of infection. Dust and insects became feared as agents that might taint food or clothing with disease-causing microorganisms. These messages were broadcast by a wide range of Progressive Era institutions, including public health departments, schools, voluntary health organizations, and labor unions. The anti-TB movement played a particularly important role in transmitting the new lessons of germ awareness. Through their numerous leaflets, parades, exhibits, and Christmas seal campaigns, TB workers made themselves and the disease a prominent feature of American life in the early 1900s.⁸

Within 2 decades, these public health crusades brought about remarkable transformations in everyday life. First, middle- and upper-class Americans developed new germ-conscious routines of personal and household hygiene. To avoid germs, men gave up long beards, women shortened their skirts. People learned to shield others from their sneezes and coughs and rejected handshaking and baby kissing as unsanitary customs. To make their homes more germ-proof, the affluent installed expensive new plumbing safeguards against sewer gas, screened their windows against flies, and abandoned their parents’ plush upholstery in favor of furnishings less hospitable to germ life. Perhaps the most revolutionary changes came in the kitchen, as American housewives began to purchase, store, and cook their food in ways designed to minimize microbial contamination. Now-familiar household fixtures, such as the white china toilet, the vacuum cleaner, and the refrigerator, became popular largely because of the growing acceptance of household bacteriology. Domestic awareness of germs radiated outward as well, as American consumers demanded higher sanitary standards in hotels, railway cars, and movie theaters.⁹

Ironically, “antisepticonsciousness” reached its heights in the early 20th century precisely as death rates from infectious dis-

eases were decreasing significantly. For example, deaths resulting from TB—the “white plague”—declined from an estimated 1 in 4 Americans in 1800 to 1 in 10 by 1900, yet the anti-TB movement peaked in the 1910s and 1920s. TB became the “master disease” of Progressive Era reformers not because it was on the rise but because it served other compelling agendas: to popularize the new germ theory of disease, to respond to the presence of new immigrant and racial groups in American cities, and to advocate for a broad range of social welfare measures.¹⁰

The development of new forms of mass media and advertising played a key role in building germ consciousness even as death rates from infectious diseases continued to decline. The first germ panic followed the mid-19th-century “print revolution,” in which new technologies such as the steam rotary press and paper pulp manufacture greatly diminished the cost of newspapers and books. Starting in the mid-1800s, a new kind of print journalism flourished as rapid turnover in news was facilitated by telegraph and international cable lines. Searching for articles to catch middle-class readers’ attention in an increasingly competitive journalistic marketplace, publishers and journalists found a gold mine of marketable topics in scientific discoveries about the cause and prevention of infectious diseases. Even filmmakers and novelists discovered the appeal of germ-related subjects. In the 1910s, Thomas Alva Edison made anti-TB melodramas that played in commercial theaters; a decade later, the well-known collaboration between bacteriologist-turned-writer Paul De Kruif and the novelist Sinclair Lewis produced the best-seller *Arrowsmith*, later made into a feature film directed by John Ford.¹¹

Changes in journalism and entertainment were closely linked to the rise of a new kind of mass advertising. Advertisements rather than subscriptions financed mass circulation newspapers and magazines. Commercial incentives both to find newsworthy subjects and to sell consumer products converged to produce a widespread interest in the germ. Even before doctors fully accepted the germ theory of disease, entrepreneurs began trying to turn fear of the microbe into profits. From an initial focus on plumbing fixtures and disinfectants, the range of goods promoted as aids to healthy living with the microbe expanded dramatically at the turn of the century. By the 1910s, the germ sell was being used to promote everything from antiseptic wall paint and sanitary garbage pails to household cleansers and toothpaste. Germ-conscious advertising campaigns became a powerful educational force that invoked scientific authority yet often kept alive discredited disease beliefs, such as the



**Turn away to cough.
It will help to prevent
many diseases,**

Poster by National Tuberculosis Association

A POSTER REPRODUCED AS A LANTERN SLIDE

This poster made an excellent lantern slide. It was used to illustrate a health talk. Eyes and ears were directed to a single idea. See discussion on page 70. The exhibit of which it is a part was reproduced in several forms: as two-color posters in quantities, as panels, lantern slides, and halftones.

The panels were made by mounting and binding the posters, as shown on page 50c.

FIGURE 1—Poster distributed by the National Tuberculosis Association (now known as the American Lung Association) during World War I. Reprinted in Ewart and Mary S. Routzahn, *The ABC's of Exhibit Planning* (New York: Russell Sage Foundation, 1918), 68b.

dread of sewer gas, simply because they served to sell products.¹²

The first great germ panic peaked in the 1910s and 1920s and thereafter began to fade. A new generation of scientific researchers began to debunk notions of deadly household germs and to devalue the need for antiseptic cleanliness in the home. Public health departments and corporate food processors took over much of the worry of securing germ-free water and food supplies. As mortality from infectious diseases continued to decline, by the

1930s heart disease and cancer became the leading causes of death, and scientific interest and public health initiatives turned to their prevention. Although polio outbreaks and germ-related advertising kept germ fears alive, by the 1960s and 1970s the discovery of antibiotics and the development of vaccines greatly lessened the perceived threat of infectious diseases. Americans still practiced rituals of germ avoidance, but as a means to prevent mild illnesses such as influenza and the common cold rather than TB or typhoid.¹³

The Second Germ Panic, 1985–Present

This relatively relaxed view of infectious diseases has since disappeared, a casualty of the AIDS epidemic. Unlike the first germ panic, the current fascination with superbugs clearly has been triggered by the appearance of this deadly disease. Moreover, the AIDS pandemic has sensitized both scientists and the public to other “emerging” infectious diseases that have as yet affected relatively few people but seem to have the potential for more deadly outbreaks. Popular apprehensions also have been stimulated by reports of drug-resistant strains of bacterial diseases and outbreaks of food- and water-borne illnesses. Of course, as many commentators have pointed out, heart disease and cancer—ailments unrelated to random encounters with superbugs—remain the leading causes of death in the United States. However, the recent appearance of frightening infectious diseases, particularly given their association with already stigmatized groups such as gay people and drug users, has sparked the late 20th century germ panic.¹⁴

The current wave of anxiety might better be described as a viral panic. Although current discussions of superbugs include antibiotic-resistant bacterial diseases, the overall perception of menace is focused primarily on viral pathogens. Much as the first germ panic followed the rapid advance of bacteriology as a scientific discipline, contemporary fears reflect the extraordinary strides that virology, molecular medicine, and evolutionary microbiology have made since the 1970s. New scientific understandings of viral genetics and the immune system have helped shape popular perceptions of HIV and Ebola virus as cunning “postmodern” disease agents breathtakingly malevolent in their genetic and physiologic behavior. The absence of effective “magic bullets” against viral disease agents only makes them seem more fearsome.¹⁵

Moreover, the AIDS epidemic has furnished a powerful incentive for educating Americans about recent advances in understanding viral diseases. Much as the anti-TB workers popularized the lessons of the new bacteriology, AIDS educators have translated the new virology into a popular gospel of HIV prevention. Ironically, in the early days of the epidemic, this meant combating the fears of casual contact and insect vectors so successfully inculcated during the first germ panic. To spread their safe-sex message, AIDS educators creatively adapted many of the same methods pioneered by the anti-TB workers, such as posters, leaflets, and exhibits. Their task has been complicated by the fierce opposition to condom distribution and needle exchanges raised by conservative groups. Unlike the anti-TB movement, AIDS workers have faced a

well-organized lobby for a “just say no” philosophy of disease prevention.

As in the first germ panic, efforts to popularize new understandings of viral menace have coincided with major changes in communication technology. Since 1980, the expansion of cable television has stimulated a new kind of news and “infotainment” environment, while improvements in satellite technology have enhanced 24-hour coverage of world events. In an increasingly competitive news industry, the AIDS epidemic, emerging diseases, and other disease outbreaks have furnished reporters with a constant stream of newsworthy stories. This coverage initially did not come easily; as Jay Kinsella has shown, activists had to fight hard to convince the mainstream media to start covering the AIDS epidemic in the early 1980s. But since then, media attention to infectious diseases has greatly increased. Satellite technology has made possible the kind of on-the-spot coverage necessary for events such as the 1995 Ebola virus outbreak in Kikwit, Zaire (now the Democratic Republic of the Congo). The results have ranged from sophisticated forms of science journalism to a tabloid sensationalism reminiscent of the late 19th-century “yellow press.”¹⁶

Much more so than in the first germ panic, popular awareness of AIDS and emerging infectious diseases has been strongly shaped by the publishing and entertainment industries. Books and movies have played a central role in making the epidemic real to Americans, from journalist Randy Shilts’s moving account of the epidemic in *And the Band Played On* (1987) to made-for-television movies such as *The Ryan White Story* (1988) and feature films such as *Philadelphia* (1993). In the 1990s, emerging diseases have produced their own mini-infotainment industry, including nonfiction accounts such as *The Hot Zone* (1994) and *The Coming Plague* (1994), novels such as *Cobra Event* (1997), and movies such as *Outbreak* (1995). A wide array of magazines, including the general news giants such as *Time* and *Newsweek*, women’s magazines such as *Redbook* and *Ladies’ Home Journal*, and popular science publications such as *Discover* and *Natural History*, have regularly covered infectious disease issues.¹⁷

The kind of exchange between science writer Paul De Kruif and novelist Sinclair Lewis that gave rise to the latter’s novel *Arrow-smith* has become even more common in late-20th-century popular culture. Distinctions between fiction and nonfiction have become more difficult to make, as movies are made from books, and books become the subjects of television news shows. Consider, for example, the career of science journalist Richard Preston, who first wrote the nonfiction bestseller

The Hot Zone, which read like a novel and was quickly optioned by 2 different film directors. Preston then wrote a best-selling novel, *The Cobra Event*, which owed much of its impact to the seeming authenticity of its revelations about bioterrorism. Completing the crossover from fiction to reality, Preston’s novel inspired President Clinton to invest more heavily in national preparedness against the hazards of biological weapons.¹⁸

As in the first germ panic, the current obsession with germs is being shaped by the dynamics of a modern consumer economy, which depends on novelty to sell goods. Public health concerns about infectious disease have been picked up and amplified by a wide range of manufacturers. Advertisements for detergents, hand soaps, and even prescription drugs have attempted to convert germ worries into higher sales. As a 1992 article on “germ warfare” reported in the trade journal *Super Marketing*, “Consumers, particularly mothers of young children, have become more hygiene-conscious than ever. And manufacturers have been quick to capitalize on this insecurity with a host of products designed to make the home as germ-free a zone as possible.” The same article reported that the market for home hygiene products grew by, in their words, an “amazing” 80% from the late 1980s to the early 1990s.¹⁹

Gauging the depth of anxieties indicated by such buying shifts is admittedly difficult. In some ways, the current germ panic seems to be producing less sweeping changes in general hygiene behavior than its early-20th-century predecessor. That may partly reflect the fact that so many of the protective practices adopted then, such as sanitary plumbing and packaging, are so firmly ensconced in everyday life that they do not need advertising. In areas in which public health protections have weakened, such as the safety of the public water supply, buying habits have changed in response. For example, between 1984 and 1997, sales of bottled water in small containers increased from 4.4 million to 750 million gallons, reflecting concerns about microbial and chemical contamination of tap water. Yet for all the popular interest in superbugs, striking inconsistencies in hygienic behavior remain. Sales of antiseptic soaps have increased overall, yet studies continue to document the laxity of hand washing after toilet use, especially among men. Likewise, the AIDS epidemic has been a great boon to the condom industry, but many Americans continue to practice high-risk sexual behaviors.²⁰

Germ Panics in Comparative Perspective

However uneven the patterns of hygienic behavior they produce, popular debates about

NOW IS THE TIME TO FIGHT!

**Death Lurks
in the Filth
on a
Fly's Feet
AVOID IT!**



**Don't Let
That Fly
Become a
Grandfather
KILL IT NOW!**

The Descendants of ONE May Fly Will Number Millions—If You Let It Live

ISSUED BY THE ILLINOIS TUBERCULOSIS ASSOCIATION, 1214 HARTFORD BLDG., CHICAGO
AN EFFECTIVE FLY POSTER. 2 1/2 X 4 INCHES. PRINTED IN RED AND BLUE.

FIGURE 2—Poster distributed by the Illinois Tuberculosis Association during World War I. Reprinted in the *Bulletin of the National Association for the Study and Prevention of Tuberculosis* 3, no. 9 (June 1917), 4.

infectious disease still can be used to understand broader anxieties about economic and social change. In both germ panics, exceptionally fertile eras of scientific discovery and major changes in media and entertainment industries coincided with Americans' struggles to adjust to new forms of economic and cultural interdependence. The first germ panic occurred during what historian Alan Trachtenberg has termed the "incorporation" of America, when new forms of transportation, industrial production, and economic organization created a greater sense of national integration. As a result, early-20th-century worries about the traffic in germs became focused on new forms of both long- and short-distance travel; Americans became greatly concerned about steamship-borne epidemics, TB-ridden Pullman cars, and the so-called streetcar cold. Similarly, the rise of mass production and distribution ushered in new anxieties about the circulation of objects among people, from microbes on paper money to TB germs trapped in sweatshop-made clothing and botulism sealed up in canned goods.²¹

The current germ panic is occurring during a similar period of awareness, this time of a global sense of interconnectedness. Instead of the railroad, the airplane is now most often implicated in the spread of infectious disease. An increase in international travel has frequently been cited as a factor in the development of the AIDS epidemic; popular accounts frequently repeat the story that "Patient Zero" in the North American AIDS

epidemic was an airline steward. Scenarios (as yet only imagined) in which Ebola or Marburg virus break out in the United States depend on the fact that their incubation periods are longer than the time needed to complete an international flight. Not only international travel but also more local movements of people have been linked to the rise of AIDS and other emerging diseases. Public health authorities note that the spread of HIV infection has often followed truck routes in Africa, India, and Southeast Asia.²²

The heightened awareness of interdependence is tied not just to transportation but also to mass immigration. Both germ panics coincided with periods of heavy immigration to the United States of groups perceived as "alien" and difficult to assimilate. At the turn of the 20th century, it was the "new" immigration from eastern and southern Europe. In the late 20th century, it is the "new new" immigration from Asia, Africa, and Latin America. The association of immigration and infectious disease has intensified scrutiny of national border crossings, from Ellis Island inspection lines to detainment camps for Haitian immigrants. As historians have noted, fears of racial impurities and suspicions of immigrant hygiene practices are common elements in both periods. Those fears have been heightened in the current germ panic by the greater ease and frequency with which immigrants travel back and forth between their old, presumably disease-ridden countries and their new, germ-obsessed American homeland.²³

As in the Progressive Era, movements of not only people but also objects figure in contemporary anxieties about infectious diseases. Compared with the first germ panic, the current fear of fomites is much more muted. For example, there is no modern parallel to the Progressive Era worries that sweatshop-made clothing harbored the germs of TB and smallpox and thus represented a direct danger to the middle-class families who bought the clothing. The anti-sweatshop movement today focuses exclusively on the health risks to workers rather than consumers. Yet, in other areas, past and present fomite-related fears have striking continuities, from germs on paper money to those on telephone receivers and toilet seats. In the wake of recent outbreaks of insect-borne diseases, popular anxieties about flies, mosquitoes, ticks, and other insects have also revived, but instead of TB and polio, Americans now worry about new ailments such as Lyme disease, dengue fever, and West Nile encephalitis.²⁴

Other interesting continuities between the first and second germ panics can be seen in the scrutiny of food processing and handling. The suspicion of the hygienic standards of corporate food processors, which dates back to Upton Sinclair's famous novel *The Jungle*, has resurfaced in widespread concern about the national food supply. Recurrent *Salmonella* and *E coli* outbreaks have prompted the first revision of federal meat-handling regulations since the Progressive Era. At a more local level, Mayor Rudy Guiliani's crusade against street vendors in New York City echoes Progressive Era campaigns against immigrant-run street markets and fruit stalls, which were condemned as germ-ridden threats to the public health. The fear of uncleanly foreigners has also been extended to imported foodstuffs. Public health authorities and consumers alike now worry about fresh fruits and vegetables grown under unsanitary conditions overseas, which may arrive in American groceries laden with *Salmonella*, *Cyclospora*, and hepatitis A.²⁵

Then, as now, escalating concerns about infectious diseases precipitated an often heated debate over the proper boundaries between public health and private hygiene, as policymakers argued over whether the hazards of incorporation are best dealt with by individual or governmental intervention. In both germ panics, the responses included a call for more individual- and household-level vigilance as well as increased state regulation of manufacturers and service providers. For example, fears about food contamination have led to campaigns for more careful kitchen hygiene (bleaching cutting boards, practicing better sponge hygiene) as well as the revised federal meat-handling regulations. This mix of private and public responses seems particu-

larly characteristic of the American public health movement.

One important difference between then and now is the shift in popular perspective regarding the government's involvement in public health. The first germ panic occurred while the legitimacy of state power was on the upswing, whereas current worries about infectious diseases are in the context of what has been a prolonged retreat from activist government, especially at the federal level. Indeed, the current germ panic reflects a profound uneasiness about the weakening of local public health infrastructures by decades of cost cutting and antigovernment rhetoric. In the post-Watergate era, public health professionals face a deep-seated suspicion of government that has been heightened by revelations about the Tuskegee syphilis experiments and Gulf War veterans' exposure to toxic chemicals. The simultaneous rise of well-organized health activism and religious conservatism has left many public health leaders feeling like "the body of a bird being beaten by its right and left wings more or less simultaneously," in the words of James W. Curran, the Centers for Disease Control and Prevention's associate director for HIV/AIDS. Thus, compared with their Progressive Era predecessors, contemporary public health leaders must work much harder to achieve and sustain public confidence.²⁶

Then, as now, one of the most interesting responses to the germ menace was a kind of evolutionary soul searching, a rethinking of the balance of nature and the relative worth of prevention and cure. The concept of a microbial "survival of the fittest" was frequently invoked in the first germ panic but with an optimistic twist. Although some eugenicists had a gloomy view of the future, early-20th-century public health leaders generally believed that humankind would win the war against the microbe because of the efficacy of preventive measures. As death rates from infectious disease plummeted, this optimism became widespread long before antibiotics were discovered.²⁷

Contemporary musings about the "revenge of the superbugs" also have strong evolutionary overtones but are significantly more pessimistic than their counterparts in the early 20th century. Close encounters with HIV have brought a new appreciation of the limits of modern biomedicine. The perspectives of evolutionary microbiology have become part of a larger ecologic critique that warns against the irreversible damage being done to the global environment: cut down the rain forests and thin the ozone layer, and the superbugs will get you. The "world out of balance" described by Laurie Garrett and others seems far less amenable to individual or even national solu-

What is your baby worth?

Priceless! A great gift that can never be replaced! Innocent and defenseless. Its comfort and health, even life itself, depend on little duties that constitute vigilant care and loving thoughtfulness.

Wherever there are flies, use Fly-Tox

In many finely appointed homes spraying every room with Fly-Tox is a daily summertime accomplishment. This is not just an exceptional refinement. Indeed, it is considered a requisite to good housekeeping. Spraying the entire room with Fly-Tox reaches and kills offensive household insects even in their places of hiding. That insures unobscured summer comfort. Musty, fly-tainted odors are displaced by an atmosphere of cleanliness. The draperies are unsoiled, spotless, beautiful. The upholstery fresh and bright, radiant with cleanliness. In the absence of unclean household insects, every room in the house glows with a refreshing, cleanly charm—a charm in which every housewife enjoys a rightful pride.

The Modern Safeguard to Health and Comfort

Fly-Tox is an established, efficient household insecticide. It was developed at Mellon Institute of Industrial Research. Stainless. Harmless to humans. Yet when its cleanly fragrant spray touches them these insect enemies to man's health and comfort crumple up and die. Fly-Tox has brought to millions of homes a new summer comfort—a home without flies or mosquitoes. Most people prefer the hand sprayer. It gives better satisfaction. However, a trail sprayer is given free with every small bottle.

HALF PINT - 50¢ PINT - 75¢ QUART - \$1.25 GALLON - \$4.00
Coffers in glass jars are occasionally available for hotels, restaurants, summer camps, institutions.

FLY-TOX
KILLS FLIES
MOSQUITOES
MOTHS, ROACHES, ANTS, FLEAS

FIGURE 3—Advertisement for Fly-Tox insecticide, reprinted from *Good Housekeeping Magazine*, vol. 91 (July 1926).

tions. As a result, the current germ panic seems to be producing a far more profound sense of vulnerability and helplessness than its predecessor did a hundred years ago.²⁸

That sense of vulnerability also reflects changing perceptions of science and medicine. The first germ panic occurred while the prestige of scientific medicine was on the rise; after decades of professional weakness, physicians and public health authorities began to enjoy considerable respect during the Progressive Era. The current germ panic reveals a much more ambivalent view of modern medicine, which reflects both a long-term erosion of professional authority in general and a new kind of health consumerism critical of both traditional fee-for-service medicine and managed care initiatives.²⁹ Interestingly enough, in the midst of the current upheavals in health care, public health physicians seem to be

enjoying a resurgence of popular prestige. In journalism and entertainment alike, they are often presented as throwbacks to an age of good doctors uncontaminated by profit-making concerns. The novels of Richard Preston and Robin Cook cast public health scientists as their heroes, battling evil corporations and crazed bioterrorists. The imagery of these portrayals bears a striking resemblance to the medical detective genre made famous in the 1920s by Paul De Kruif's *Microbe Hunters* and Sinclair Lewis's *Arrowsmith*.³⁰

Policymakers and historians tend to ignore trends in popular culture as annoying or irrational distractions, yet these trends constitute a powerful source of information about public health issues. For all the resources devoted to AIDS education programs in public schools, for example, a recent study showed that schoolchildren still learn much of

what they know about bacteria and viruses from television advertisements for toothpaste and household cleaners. In general, the role of journalism, entertainment, and advertising in transmitting public health messages deserves more scholarly attention.³¹

This point is all the more important given that many of the germ protections being offered to American consumers today do not address the most serious dangers of infection. For example, consumers are encouraged to buy expensive hand soaps and household cleaners that some experts fear will only increase the number of dangerous bacteria in the domestic environment. The larger issue is where a market-driven consumer society is likely to invest its resources. Are Microban-coated children's toys likely to win out over free immunization campaigns, or will *Salmonella*-resistant sponges flourish over more stringent industry standards of food processing?³²

Conclusion

In conclusion, I emphasize that the making of a germ panic has never been a wholly conscious or orderly process. Although the general message—that germs are dangerous and must be avoided—is somewhat consistent, popular discourses about infectious disease always contain many contradictory elements. The meanings that scientists, journalists, activists, filmmakers, and advertising agents attach to the menacing microbe vary enormously, and once they advance a particular interpretation of the germ, they immediately lose control of it. A case in point is activists' attempts to use media publicity to draw attention to a disease. Both TB workers and AIDS activists framed those diseases in terms of larger political and social issues with the intention of helping the disease's victims. Yet the very process of focusing public attention on the disease problem set other, less sympathetic forms of prejudice into play.

The imperatives of seeking newsworthy stories have become a force skewing public discussions of disease in other problematic directions. As historian Bert Hansen has shown, the preference for event-oriented news coverage favors narratives featuring heroic scientists, dramatic discoveries, and "magic bullets." The inevitable realization that many scientists are not heroes, that many discoveries are overturned, and that many cures are ineffective leads to disappointment.

In addition, the dynamics of attracting attention in a mass consumer society require maximizing and dramatizing risk. For a disease to seem a compelling threat, it must be seen as a menace to the majority, especially affluent White Americans. Thus, media cover-

age tends to play up "it-could-happen-to-anyone" scenarios, especially the dangers of casual contact, even when they are extremely rare. Likewise, groups trying to promote a disease as newsworthy often exaggerate its threat to everyone, even when some people are clearly at higher risk than others. These ploys inevitably frighten the audience and induce a "boy who cried wolf" fatigue regarding future warnings that may be more warranted. At the same time, they often distract attention from the known explanations for infection, thus fueling the disease's spread.³³

Finally, the tendency of the entertainment industry to provide conspiratorial, "X-Files"—type explanations for changing patterns of infectious disease is deeply troubling. Instead of focusing popular attention on the all-too-real environmental changes that are creating the "warmer, wetter, sicker" syndrome, novels and films focus on Central Intelligence Agency conspiracy, demented terrorists, or alien invasions. The American paranoid style seems in full force, looking for conspiracies of small groups of evildoers rather than facing the complexity of the health problems at hand. When one compares the level of analysis offered by *Outbreak* with the scientific reports about emerging diseases, the gap in understanding is truly frightening.³⁴

These contemporary problems have no easy solutions. But historians have a useful role to play by placing them in a longer time frame and highlighting the larger cultural mechanisms of selection and attention that make some health hazards loom large while others recede. With no end to the current germ panic in sight, this kind of analysis is even more necessary. A recent poll conducted by the Pew Research Center for the People and the Press³⁴ found that 56% of the Americans sampled believed that the new millennium would bring an epidemic worse than AIDS. Undoubtedly, we have not seen the last of the killer germ phenomenon, for it involves too many of the public health challenges we carry into the new millennium. □

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Endnotes

1. For the details of the Atlanta water park incident, see Jeffrey Kluger, "Anatomy of an Outbreak," *Time*, 3 August 1998, 57–62.
2. Michael D. Lemonick, "The Killers All Around Us," *Time*, 12 September 1994, 62–69; Kluger, "Anatomy of an Outbreak," 57–62.

3. Laurie Garrett, *The Coming Plague: Newly Emerging Diseases in a World Out of Balance* (New York: Farrar, Straus and Giroux, 1994); Richard Preston, *The Hot Zone* (New York: Random House, 1994).
4. These statistics on AIDS are as of December 1998, taken from the Centers for Disease Control and Prevention Web site, <http://www.cdc.gov>.
5. See, for example, Tim Weiner, "Finding New Reasons to Dread the Unknown," *New York Times*, 26 March 1995, sec. IV, p. 1; Hanna Rosin, "Don't Touch This," *New Republic*, 10 November 1997, 24–31. For more scholarly treatments of media coverage of AIDS and emerging diseases, see P. A. Treichler, D. E. McGee, M. V. Ruiz, and N. S. Karnik, "The Legacy of AIDS: Global Media Coverage of Emerging Infectious Diseases" (paper presented at the 12th World AIDS Conference, Geneva, Switzerland, 28 June to 3 July 1998).
6. On the moral panic concept, see Erich Goode and Nachman Ben-Yehuda, *Moral Panics: The Social Construction of Deviance* (Cambridge, England: Blackwell, 1994). The scientific reports that have advanced the "warmer, wetter, sicker" hypothesis include Joshua Lederberg, Robert E. Shope, and Stanley C. Oaks Jr, eds., *Emerging Infections: Microbial Threats to Health in the United States* (Washington, DC: National Academy Press, 1992); and Mary E. Wilson, Richard Levins, and Andrew Spielman, eds., "Disease in Evolution: Global Changes and Emergence of Infectious Diseases," *Annals of the New York Academy of Sciences* 740 (1994): 15.
7. The synthesis in this and subsequent paragraphs about the first germ panic is drawn from Nancy Tomes, *The Gospel of Germs: Men, Women, and the Microbe in American Life* (Cambridge, Mass.: Harvard University Press, 1998).
8. On the history of the antituberculosis movement, see Michael Teller, *The Tuberculosis Movement* (Westwood, Conn: Greenwood Press, 1988); Tomes, "Tuberculosis Religion," Chap. 5 in *Gospel of Germs*.
9. Tomes, "Antisepticonscious America," Chap. 7 in *Gospel of Germs*. On rising standards of cleanliness, see also Hoy, *Chasing Dirt: The American Pursuit of Cleanliness* (New York: Oxford University Press, 1995).
10. These generalizations are based on the now-voluminous historical literature on the disease, including Mark Caldwell, *The Last Crusade: The War on Consumption, 1862–1954* (New York: Atheneum, 1988); Georgina Feldberg, *Disease and Class: Tuberculosis and the Shaping of Modern North American Society* (New Brunswick, NJ: Rutgers University Press, 1995); Barron H. Lerner, *Contagion and Confinement: Controlling Tuberculosis Along the Skid Row* (Baltimore: Johns Hopkins University Press, 1998); Katherine Ott, *Fevered Lives: Tuberculosis in American Culture Since 1870* (Cambridge: Harvard University Press, 1996); and Sheila Rothman, *Living in the Shadow of Death: Tuberculosis and the Social Experience of Illness in the United States* (New York: Basic Books, 1994).
11. On the new print journalism and the interest in germs, see Andrew McClary, "Germs Are Everywhere: The Germ Threat as Seen in Magazine Articles, 1890–1920," *Journal of American Culture* 3 (1980): 33–46. On press coverage of

- disease, see Terra Ziporyn, *Disease in the Popular American Press: The Case of Diphtheria, Typhoid Fever, and Syphilis, 1870–1920* (New York: Greenwood, 1988); and Bert Hansen, “America’s First Medical Breakthrough: How Popular Excitement About a French Rabies Cure in 1885 Raised New Expectations for Medical Progress,” *American Historical Review* 103, no. 2 (1998): 373–418. On the popularization of science more generally in this period, see John Burnham, *How Superstition Won and Science Lost: Popularizing Science and Health in the United States* (New Brunswick, NJ: Rutgers University Press, 1987). On the Broadway play *Yellow Jack* and early Hollywood interest in medical melodramas, see Susan E. Lederer and John Parascandola, “Screening Syphilis: Doctor Ehrlich’s Magic Bullet Meets the Public Health Service,” *Journal of the History of Medicine* 53, no. 4 (October 1998): 345–370.
12. See Tomes, *Gospel of Germs*, esp. Chaps. 3 (“Entrepreneurs of the Germ”) and 7 (“Antisep-ticonscious America”). On the germ sell, see also Hoy, *Chasing Dirt*, and Vincent Vinikas, *Soft Soap, Hard Sell: American Hygiene in an Age of Advertisement* (Ames: Iowa State University Press, 1992). For a good overview of the history of American advertising, see Daniel Pope, *The Making of Modern Advertising* (New York: Basic Books, 1983).
 13. See Tomes, *Gospel of Germs*, esp. Ch. 10. On polio and the persistence of germ fears, see Emily Martin, *Flexible Bodies: Tracking Immunity in American Culture From the Days of Polio to the Age of AIDS* (Boston: Beacon Press, 1994).
 14. My generalizations about infectious disease problems in the 1980s and 1990s are based on Lederberg, Shope, and Oaks, *Emerging Infections*, and Wilson, Levins, and Spielman, “Disease in Evolution.” On the history of the AIDS epidemic, see especially the accounts provided by Virginia Berridge and Philip Strong, eds., *AIDS and Contemporary History* (New York: Cambridge University Press, 1993); and Caroline Hannaway, Victoria Harden, and John Parascandola, eds., *AIDS and the Public Debate: Historical and Contemporary Perspectives* (Washington, DC: IOS Press, 1995); Jay Kinsella, *Covering the Plague: AIDS and the American Media* (New Brunswick, NJ: Rutgers University Press, 1989); and Steven Epstein, *Impure Science: AIDS, Activism, and the Politics of Knowledge* (Berkeley: University of California Press, 1996).
 15. For insightful discussions of viral imagery and metaphors, see Susan Sontag, *AIDS and Its Metaphors* (New York: Farrar, Straus, and Giroux, 1988), 17–20; and Martin, *Flexible Bodies*.
 16. Kinsella, *Covering the Plague*. See also Epstein, *Impure Science*.
 17. Dorothy Nelkin provides a useful introduction to the more general problem of how the press covers science in *Selling Science: How the Press Covers Science and Technology* (New York: W. H. Freeman and Co, 1987). For a more recent assessment of similar issues involved in the response to BSE (bovine spongiform encephalopathy), see Scott C. Ratzan, ed., *The Mad Cow Crisis: Health and the Public Good* (New York: New York University Press, 1998).
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 19. Mary Ratcliffe, “Germ Warfare,” *Super Marketing*, 20 November 1992, 40.
 20. Sales statistics for bottled water are taken from Constance L. Hays, “Now, Liquid Gold Comes in Bottles,” *New York Times*, 20 January 1998, D1. See also Suzanne Hamlin, “Behind Americans’ Love of Bottled Water,” *New York Times*, 24 July 1996, C1. On increasing sales of hand soaps, see Ratcliffe, “Germ Warfare,” 40. On hand-washing practices, see “Not All Hands Are Inclined to Wash Them,” *New York Times*, 9 October 1994, I20, which reports on a survey done at the 1993 meeting of the American Society of Microbiologists in New Orleans, La; of 493 people observed, 87% of the women and 56% of the men washed up. See also “Shame on You! Wash Your Hands! Especially You 40% at Penn Station,” *New York Times*, 17 September 1996, C3. On the revival of condom sales, see Paula Treichler, “How to Use a Condom: Bed-time Stories for the Transcendental Signifier,” in *Disciplinary and Dissent in Cultural Studies*, eds. Cary Nelson and Dilip P. Gaonkar (New York: Routledge Press, 1996), 347–396. Recent reviews of the effect of AIDS education on sexual risk reduction suggest uneven results among both heterosexuals and homosexuals. See W.D. Johnson et al., “Meta-Analysis of Sexual Risk Reduction Studies Among Men Who Have Sex With Men” (12th World AIDS Conference, Geneva, Switzerland, June 28–July, 1998. Extended Version of Abstracts, Abstract No. 4392, p. 905), 12:905; and L. S. Weinhardt et al., “Effects of HIV Counseling and Testing on Sexual Risk Behavior,” *American Journal of Public Health* 89 (1999): 1397–1405.
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 23. On the persistent connection between immigra-tion and disease anxieties, see Kraut, *Silent Travelers* (New York: Basic Books, 1994), and Markel, *Quarantine!*
 24. On the new generation of fomes fears, see, for example, Patricia Gadsby, “Filthy Lucre,” *Discover*, 10 October 1998, 76–84. On the revival of concerns about insects and the spread of disease, see, for example, Robin Marantz Henig, “The New Mosquito Menace,” *New York Times*, 13 September 1995, A23. On the evolution of insect fears, see Naomi Rogers, “Germs With Legs,” *Bulletin of the History of Medicine* 63, no. 4 (Winter 1989): 599–617.
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 27. Tomes, *Gospel of Germs*, 43–47.
 28. Garrett, *The Coming Plague*.
 29. On changing perceptions of medical authority and their relation to a new kind of consumer health activism, see Epstein, *Impure Science*.
 30. Kluger, “Anatomy of an Outbreak,” 57–62. Recent novels featuring public health scientists as heroes include Richard Preston, *The Cobra Event* (New York: Random House, 1997); Robin Cook, *Vector* (New York: Putnam, 1999); and John S. Marr and John Baldwin, *The Eleventh Plague* (New York: Cliff Street Books/Harper-Collins Publishers, 1998).
 31. Bret Johnson, “Television, Movies Help Chil-dren Picture Germs,” *UNC–Chapel Hill News Service*, 14 April 1998. In my next book, tenta-tively titled *Making the Modern Health Con-sumer*, I plan to examine these issues more sys-tematically.
 32. Some experts are concerned that overuse of dis-infectants will simply increase the number of resistant microorganisms in the household envi-ronment. See Stuart B. Levy, “The Antibacterial Fad: A New Threat,” *Scientific American*, March 1998, 48. The “hygiene hypothesis” posits that the success of modern hygiene has contributed to the growing incidence of aller-gies and autoimmune disorders. See Garry Hamilton, “Let Them Eat Dirt,” *New Scientist*, 18 July 1998, 26–31.
 33. Hansen, “America’s First Medical Breakthrough.” On the “boy who cries wolf” problem, see Susan D. Moeller, *Compassion Fatigue: How the Media Sell Disease, Famine, War and Death* (New York: Routledge, 1999). An excellent example of this kind of conspiracy genre is Milton William Cooper, *Behold a Pale Horse* (Sedona, Ariz: Light Technology Publishing, 1991). Another is the argument that HIV was a virus deliberately designed to kill poor people of color. See Karen Grigsby Bates, “Is It Genocide?” *Essence*, Sep-tember 1990, 76–78, 116–117.
 34. The Pew Research Center for the People and the Press, “Americans Look to the 21st Century,” <http://www.people-press.org/mil12rpt.htm>. Accessed October 26, 1999.